

***Remarks***

Applicants thank the Examiner for his careful consideration of this application.

Reconsideration of this Application is respectfully requested in view of the amendments above and the remarks below.

Upon entry of the above amendments, Claims 1-40 are now pending in this application, with Claims 1, 4, 29, 31, and 35 being independent claims. New Claims 39 and 40 have been added.

At pages 3-15 of the Examiner's Answer, Claims 1-3, 22-27, and 35-38 continue to be rejected as being anticipated by Chun et al. and/or Antani et al. The reader is referred to Applicants' arguments stated in their Appeal Brief filed on March 31, 2006. Applicants respectfully submit that Claims 1-3, 22-27, and 35-38 continue to be allowable for at least the reasons stated therein, and Applicants request withdrawal of the rejections based on the prior art.

At pages 16-23, the Examiner's Answer states new grounds of rejection. In particular, the Examiner's Answer rejects Claims 1-38 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. These rejections are respectfully traversed in view of the amendments above and the remarks below.

Initially, the Examiner's Answer asserts that Claims 1-38 do not claim a "useful, concrete, and tangible result." As noted in paragraphs [0003]-[0007] of the specification, the extraction of an overlay from an input video stream results in a useful, concrete, and tangible result. As described in those paragraphs, the very extraction of an overlay, in and of itself, results in

obtaining a video stream without the overlay and/or overlay without the underlying video. This is consistent with the Federal Circuit's holding in *Arrhythmia Research Tech. v. Corazonix Corp.*, 958 F.2d 1053, 22 USPQ2d 1033 (Fed. Cir. 1992), quoted in *State Street Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 47 USPQ2d 1596 (Fed. Cir. 1998):

Similarly, in *Arrhythmia Research Technology Inc. v. Corazonix Corp.*, 958 F.2d 1053, 22 USPQ2d 1033 (Fed. Cir. 1992), we held that the transformation of electrocardiograph signals from a patient's heartbeat by a machine through a series of mathematical calculations constituted a practical application of an abstract idea (a mathematical algorithm, formula, or calculation), because it corresponded to a useful, concrete or tangible thing—the condition of a patient's heart.

*State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601. That is, just as in *Arrhythmia*, a transformation of electrocardiograph signals resulted in something useful, concrete, and tangible, so, too, the manipulation of an input video stream to extract an overlay results in something useful, concrete, and tangible. Therefore, Applicants respectfully submit that Claims 1-38 claim a useful, concrete, and tangible result.

Applicants further note that "video" and "video processing" are not inherently abstract concepts. In particular, "video" has been concretely and specifically defined in the specification (see paragraph [0018]) as referring to "motion pictures represented in analog and/or digital form." This is not an abstract concept. "Video processing" has been concretely and specifically defined in the specification (see paragraph [0019]) as referring to "any manipulation of video." Manipulation of video is also not abstract and inherently results in something concrete (namely, manipulated video, which is not abstract).

The Examiner's Answer next asserts, at page 21, that Claim 26 is non-statutory in that the term "computer-readable medium" is defined in the specification as including both storage media and carrier wave-type media (see paragraph [0014] of the specification). According to the Examiner's Answer, the U.S. Patent and Trademark Office "Interim Guidelines for Examination of Patent Applications for Subject Matter Eligibility" (published in the *Official Gazette* on 22 November 2005) maintain that software embodied on carrier wave-type media is not eligible subject matter. While Applicants respectfully disagree with this position and respectfully traverse this rejection, Applicants have elected to add the word "tangible" to Claims 26-28.

It is initially noted that patent laws regarding non-statutory subject matter have not changed since the "Examination Guidelines for Computer-Related Inventions" ("the previous Guidelines") were published by the U.S. Patent and Trademark Office ("PTO"), preceding the new interim guidelines. It is respectfully submitted that, under those guidelines, the present claims would be found to be statutory.

Current laws and legal precedent clearly allow claims in the form of a computer readable medium, as recited in claims 26-28. See *In re Beauregard*, 35 USPQ2d 1383 (Fed.Cir. 1995). The previous Guidelines clearly show that this type of claim is a *statutory computer program embodied on a computer-readable medium*, where the computer-readable medium is a carrier wave (see, e.g., Example 13 of the previous Guidelines). Thus, the alternative description of computer-readable medium as a propagated or carrier wave signal in the specification at paragraph [0013], is clearly statutory subject matter. Further, the burden is on the PTO to set forth a *prima facie* case of

unpatentability. The Examiner bears the burden of establishing that a claimed invention is a natural phenomenon. Therefore, absent object evidence to support the position that the signal is a natural phenomenon, such a position would be untenable. M.P.E.P. § 2106 states that: "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized."

The computer readable medium, as claimed, is a statutory article of manufacture. The carrier wave may be encoded with the "functional descriptive material." And as will be discussed below, a carrier wave is not intangible and merely a form of energy. Nor is whether a thing is "energy" the proper test. The proper test in this case is whether the thing is a "natural phenomenon." Until patent laws or legal precedent reverse this doctrine, computer readable medium claims in the form of diskettes, optical drives, non-volatile memory and carrier wave signals, etc., are all statutory subject matter.

Although a complete explanation has not been made, the Examiner's Answer *seems* to assert that a signal or carrier wave is *non-statutory* because it is "energy" and presumably not "in a tangible medium," as was held to be statutory subject matter by the court in *Beauregard*. As recited below, there is, however, legal precedent that shows that the view that there is nothing physical (i.e., tangible) about signals is incorrect.

These claimed steps of "converting", "applying", "determining", and "comparing" are physical process steps that transform one physical, electrical signal into another. The view that "there is nothing necessarily physical about 'signals'" is incorrect. *In re Taner*, 681 F.2d 787, 790, 214 USPQ 678, 681 (CCPA 1982)

(holding statutory claims to a method of seismic exploration including the mathematically described steps of "summing" and "simulating from"). The Freeman-Walter-Abele standard is met, for the steps of Simson's claimed method comprise an otherwise statutory process whose mathematical procedures are applied to physical process steps.

*Arrhythmia Research Technology Inc. v. Corazonix Corp.* 22 USPQ2d 1033, 1038 (Fed. Cir. 1992).

Appellants' claims are not in our view merely directed to the solution of a mathematical algorithm. Though the claims directly recite an algorithm, summing, we cannot agree that appellants seek to patent that algorithm in the abstract. Appellants' claims are drawn to a technique of seismic exploration which simulates the response of subsurface earth formations to cylindrical or plane waves. That that technique involves the summing of signals is not in our view fatal to its patentability. Appellants' claimed process involves the taking of substantially spherical seismic signals obtained in conventional seismic exploration and converting ("simulating from") those signals into another form, i.e., into a form representing the earth's response to cylindrical or plane waves. Thus the claims set forth a process and are statutory within §101.

Though the board conceded that appellants' process includes conversion of seismic signals into a different form, it took the position that "there is nothing necessarily physical about 'signals' " and that "the end product of [appellants' invention] is a mathematical result in the form of a pure number." That characterization is contrary to the views expressed by this court in *In re Sherwood*, 613 F.2d 809, 204 USPQ 537 (CCPA 1980), and *In re Johnson*, 589 F.2d 1070, 200 USPQ 199 (CCPA 1978), where signals were viewed as physical and the processes were viewed as transforming them to a different state." [emphasis added]

*In re Taner, Koehler, Anstey, and Castelberg*, 214 USPQ 678, 681 (CCPA 1982).

Furthermore, even the M.P.E.P. states that signal claims are statutory: "a signal claim directed to a practical application of electromagnetic energy is statutory regardless of its transitory nature. See *O'Reilly*, 56 U.S. at 114-19; *In re Breslow*, 616 F.2d 516, 519-21, 205 USPQ 221, 225-26 (CCPA 1980)." MPEP 2106 IV.B.1.(c).

Thus, one can safely assume, until a court of higher authority holds otherwise, that a computer readable medium in the form of a signal claim is clearly statutory.

The above notwithstanding, Applicants have elected to amend Claims 26-28 to recite “A tangible computer-readable medium ...” The use of the term “tangible” addresses the Office Action’s assertion that Claims 26-28 are directed to intangible media. However, as legal precedent shows (see above), carrier waves are tangible forms. Readers of a patent issuing from this application will be put on notice that the claims recite a computer-readable medium, which may comprise any number of tangible media, such as solid-state memories, optical and magnetic disks, and a carrier wave that encodes a data signal, etc., as described in the specification. Should a higher court of law create legal precedent that defines carrier waves as intangible, then a reader of such patent will understand Claims 26-28 to exclude carrier waves from the recited “tangible machine accessible medium.” In either case, it is respectfully submitted that these claims are directed to statutory subject matter.

Finally, at pages 22-23, the Examiner's Answer cites a third basis on which to reject Claims 1-38 as being non-statutory in nature, asserting that they preempt all substantial uses of some underlying abstract mathematical concept. Applicants respectfully disagree with this assertion.

First, all of the claims are limited to video processing. As noted, e.g., in paragraph [0018] of Applicants' specification, "video" is limited to "motion pictures." Therefore, the underlying

mathematical concepts may be applied to non-video sources without infringing on the metes and bounds of the claims.

Second, even if this were not sufficient reason to show that other uses are not preempted, the claims are further limited to a "method of video processing . . . comprising . . . extracting a pre-existing overlay present in a video sequence." Therefore, the underlying mathematical concepts are not only being applied only to video processing, but within video processing, they are only being applied to a specific use (extraction of overlays from video). That is, there may be many further uses for the underlying abstract mathematical concepts. Stated otherwise, the claims are not preempting the general use of any specific mathematical formula or mathematical concept (e.g., wavelet decomposition, neural networks, template matching, correlation and other statistical techniques), e.g., by merely claiming such mathematical formula or mathematical concept. On the contrary, the claims recite how such underlying mathematical concepts may be applied in particular ways to address a particular problem.

Therefore, it is respectfully submitted that the assertion that the claims preempt all substantial uses of any of their underlying abstract mathematical concepts is not supported by the claim language and should be withdrawn.

New Claims:

New Claims 39 and 40 have been added. These claims are method claims depending from Claims 1 and 4, respectively, and reciting the step of receiving a carrier wave containing computer-readable code for implementing the respective methods of Claims 1 and 4. It is

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respectfully submitted that these claims are supported by the specification, e.g., at paragraph [0014] and that they are allowable for at least the same reasons for which Claims 1 and 4 are allowable.



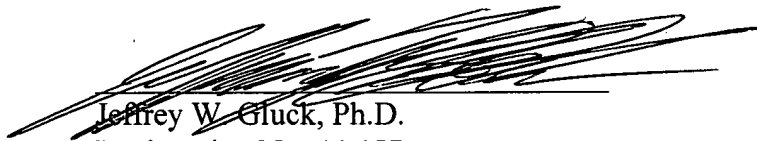
***Conclusion***

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants, therefore, respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is hereby invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,

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